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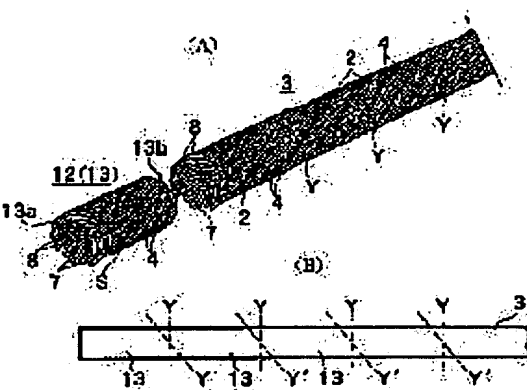
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(54) TREATMENT MATERIAL FOR ANIMAL EXCRETION**(57)Abstract:**

PROBLEM TO BE SOLVED: To provide a material for treating the excretion of animals having high urine permeation.

SOLUTION: A strip of paper 1 is twisted to form a twisted string 3 and the string is cut short and the resultant short-cut, twisted paper rods 13 are used as the objective excretion treatment material. In this case, the short-cut, twisted rod 13 is made in a paper layer structure S so that the paper fibers are directed from one cross section to the other cross section and the excretion including urine is permeated from the individual cross sections 13a, 13b along the paper layer structure S into the short-cut twisted paper rods 13.

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CLAIMS

[Claim(s)]

[Claim 1] It is the excrement processing material of the animal characterized by to consider as the configuration which it has [configuration] the paper structure in which the above-mentioned little twist rod pointed to fiber towards the other-end cutting plane in the excrement processing material of the animal which consists of the little twist rod which gave the twist to the wrapper band and cut the formation **** twist string to short ** from the end cutting plane, and makes excrement permeate into a little twist rod from each cutting plane according to this paper structure.

[Claim 2] It is the excrement processing material of the animal characterized by having twist HIDA by which the above-mentioned little twist rod goes to an other end cutting plane from an end cutting plane in the excrement processing material of the animal which consists of the little twist rod which gave the twist to the wrapper band and cut the formation **** twist string to short **, and having a formation **** rough opening by twist return between these twist HIDA.

[Claim 3] Excrement processing material of the animal according to claim 1 or 2 characterized by setting the twist angle of the above-mentioned little twist rod as less than 180 degrees per cm.

[Claim 4] Claim 1 characterized by making the cross-section configuration of the above-mentioned little twist rod into an abbreviation oblong, 2, or excrement processing material of an animal given in three.

[Claim 5] Excrement processing material of the animal according to claim 1, 2, 3, or 4 characterized by making the above-mentioned little twist rod hold the bacteria which promote disaggregation of fiber.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to excrement processing material, such as animals for an experiment, such as pets, such as a cat and an indoor dog, or a guinea pig, and a hamster.

[0002]

[Description of the Prior Art] JP,54-24945,B cuts out paper-milling paper to the wrapper band of a suitable narrow width, gives and twists a twist to this wrapper band, forms a string, and shows the excrement processing material of the animal which consists of the little twist rod which cut this twist string to short ** with a die length of about 2-10mm.

[0003] A majority of these excrement processing material is used for the tray for elimination of an animal etc., covering it with it, aims at urine osmosis according to the water retention operation and the water absorption operation of paper by HIDA of this processing material, removes from a tray the processing material which this urine permeated, and he is trying to supplement a tray with a sink and again new processing material in a rinsing toilet etc.

[0004]

[Problem(s) to be Solved by the Invention] This invention provides the excrement processing material of the animal which was made enriched in the urine osmosis operation (a water absorption operation and water retention operation) in the above-mentioned conventional example, and made the function as excrement processing material improve remarkably, adopting the configuration which twisted paper-milling paper and formed it like the above-mentioned conventional excrement processing material and which twists and cuts a string to short **.

[0005]

[Means for Solving the Problem] In case the excrement processing material of the animal which cuts the above-mentioned twist string to short **, and consists of a little twist rod as the means is formed It is made the paper structure which turned this little twist rod to the other end cutting plane from the end cutting plane, and pointed to fiber. It gets remarkably impudent in the capillary action from an end cutting plane to the other end cutting plane of a little twist rod to the orientation of

the fiber in a little twist rod, i.e., capillary action, (urine osmosis operation) according to this paper structure, and improvement in an excrement treatment effect is aimed at.

[0006] the above-mentioned little twist rod -- the twist angle of less than 180 degrees per cm -- with -- **** -- it twists, and it twists, whenever [between HIDA / rough opening] is raised, and the water retention operation in a rough opening and the osmosis operation following it are raised.

[0007] Moreover, after twisting the above-mentioned little twist rod, it gives and twists twist return and secures a gestalt and the above-mentioned rough opening. By this, it multiplies by the above-mentioned paper structure, and the improvement of the remarkable urine pass-through effect is obtained, and cushion effect and a heat insulation effect can also be improved by the above-mentioned rough opening.

[0008] Moreover, the end-face configuration of the above-mentioned little twist rod is made into an abbreviation oblong, **** to a construction side is improved (preventing rolling motion), and, in addition, a liquid receiving side is covered and expanded to stability in an elimination tray.

[0009] Moreover, the above-mentioned little twist rod is made to hold the bacteria which promote disaggregation of fiber. When passing used excrement processing material to a rinsing toilet as aforementioned and discarding, the above-mentioned bacteria collaborate with said paper structure and HIDA structure, promote disaggregation of fiber and decomposition in a rinsing toilet, a distributing water pipe, or a septic tank, and mitigate the processing burden in a treatment facility.

[0010]

[Embodiment of the Invention] The example of an operation gestalt of this invention is explained based on drawing 1 thru/or drawing 6 below.

[0011] 1 shows the wrapper band milled from pulp, and this wrapper band 1 gives the directivity of pulp fiber 2 in the transit direction of a wet paper web by the known approach at the time of paper making, and mills it.

[0012] As shown in drawing 1 A, a wrapper band 1 mills a wide wrapper band for the disaggregation pulp fiber 2 of a milk carton by the orientation **** approach to a longitudinal direction (the transit direction of a paper-making band). While being the paper tape which carried out the train end of this wide wrapper band along the orientation of fiber 2 at the narrow width, being torn along with the tension strength of a short hand to a longitudinal direction, i.e., the direction, with the directivity of this fiber 2 and having reinforcement It has the paper structure where it was made enriched in the capillary action (moisture osmosis operation to orientation) to the orientation of this fiber 2.

[0013] That is, while a wrapper band 1 has ***** crack **** by lengthwise direction orientation (longitudinal direction orientation of a wrapper band 1) of fiber 2, it has the Yokobiki crack ***** and prevents the Yokobiki ***** of the wrapper band 1 at the time of twist string 3 formation.

[0014] As the above-mentioned wrapper band 1, it chooses in the range of a basis

weight 30 – 40 g/m², and short hand lay length is made into the paper width of the range of 3–15cm, and a twist of 30 – 180 degrees per die length of 1cm is given and twisted to this wrapper band 1, and it is made a string 3. This twist string 3 has the paper structure where it pointed to pulp fiber 2 towards the other end to the longitudinal direction from the end. That is, as shown in drawing 2 A, it has the paper structure where this twist string 3 twisted and it pointed to the above-mentioned fiber 2 along with the doubling line 4.

[0015] As it forms by a streak of wrapper band 1, or it is shown in drawing 1 B, and the wrapper band 1 of two or more articles, for example, three articles, is piled up or it is shown in drawing 1 C, the above-mentioned twist string 3 piles up, folds and does the wide wrapper band 1 in the direction of a short hand through the broken line of a longitudinal direction, gives and twists the above-mentioned twist to this, and makes it a string 3. That is, the twist structure in the superposition or the heavy chip box of this wrapper band 1 is given to the little twist rod 13 which is obtained from this twist string 3 and which carries out a postscript, and the impudence and the improvement in functional in the number of the rough openings 8 are aimed at.

[0016] The bacteria possession layer 5 is applied to the front face of the above-mentioned wrapper band 1 with a spray gun or a roller, and is formed in it.

[0017] Comparatively, the wrapper band 1 milled and dried with the paper machine forms in the front face of this precise layer 1', i.e., the front face of a wrapper band 1, the above-mentioned bacteria possession layer 5 which promotes disaggregation of fiber 2, as layer 1' precise at lubrication according to inorganic bulking agents, starch, etc., such as a calcium carbonate, to the front face which touches a paper-making band, a press roll, and a dryer roll is formed and it is shown at drawing 5 and drawing 6 .

[0018] Or the antimicrobial agent possession layer 6 is formed in the front face of this wrapper band 1. Or the deodorant possession layer 9 is formed in the front face of this wrapper band 1. Or the possession layer of an antimicrobial agent or/and a deodorant is formed in the front face of a wrapper band 1 with bacteria.

[0019] The wrapper band 1 in which the above-mentioned bacteria possession layer 5 grade was formed, or the wrapper band 1 which does not form bacteria possession layer 5 grade is prepared, it uses any they are, and the twist string 3 is formed.

[0020] The above-mentioned twist string 3 gives and forms a twist in a wrapper band 1 by the known approach, and makes it the twist string 3 of a cross-sectional-view approximate circle form. This twist string 3 has two or more rough openings 8 formed between two or more twist HIDA 7 and this each twist HIDA 7, as shown in drawing 2 A.

[0021] As shown in drawing 2 A and B, the above-mentioned twist string 3 is cut to short **, and many little twist rods 13 of a cross-sectional-view approximate circle form are formed.

[0022] Or as shown in drawing 3 , the form with compression of the above-mentioned twist string's 3 cross-section configuration is carried out to an

abbreviation oblong with a pressure roll 10, this twist string 3 is cut to short **, and many little twist rods 13 of an oblong are formed.

[0023] As shown in drawing 4 , it can sit down to a construction side, and the little twist rod 13 of an oblong is good, and a sex inhibits rolling motion and can lay it to stability. In addition, the liquid receiving area to the excrement from the upper part is increased.

[0024] The above-mentioned little twist rod 13 has two or more rough openings 8 formed between two or more twist HIDA 7 and this each twist HIDA 7. This rough opening 8 is wide opened in the both-ends cutting planes 13a and 13b of the little twist rod 13. this rough opening 8 -- a conduit -- it has a function, urine permeation into the little twist rod 13 is drawn, and collaboration with said paper structure S performs urine osmosis into a rod 13 effectively.

[0025] As shown in drawing 2 B as one good example, the little twist rod 13 which cuts the above-mentioned twist string 3 to about 10-50mm short ** in the cutting plane line Y which intersects perpendicularly with this twist string's 3 axis, and accomplishes the excrement processing agent 12 is formed.

[0026] As shown in drawing 2 B as other good examples, the little twist rod 13 which cuts the above-mentioned twist string 3 aslant in die length of about 10-50mm on cutting-plane-line Y' which crosses an axis and across this twist string 3, and accomplishes the excrement processing agent 12 is formed. The excrement osmosis operation which increases and carries out the postscript of the area of the cutting plane of each little twist rod 13 by this diagonal cut is improved further.

[0027] the above-mentioned little twist rod -- the twist angle of less than 180 degrees per cm -- with -- **** -- two or more twist HIDA 7 and rough openings 8 which twist and have this twist angle are formed, it twists according to the above-mentioned twist angle, whenever [opening / of the rough opening 8 between HIDA 7] is raised, and the water retention operation in a rough opening and the osmosis operation following it are raised.

[0028] If it explains in full detail, to the wrapper band 1 which gave the directivity of disaggregation pulp fiber in the transit direction of a wet paper web by the known approach at the time of paper making, and milled paper as mentioned above A twist of 30 - 180 degrees per die length of 1cm is added and twisted, a string 3 is formed, and the little twist rod 13 which had the twist angle of 30 abbreviation - about 900 abbreviation according to the die length which, subsequently to die length of about 10-50mm, cut and this cut this twist string 3 is formed. Therefore, the rough opening 8 is formed in twist HIDA 7 list with the twist angle of less than 180 degrees per cm.

[0029] As shown in drawing 5 and drawing 6 , the above-mentioned little twist rod 13 had the paper structure S which pointed to fiber 2 towards other end cutting plane 13b from end cutting plane 13a, the cutting planes 13a and 13b of the above-mentioned little twist rod 13 were not covered by said precise layer 1', but the end face of fiber 2 has exposed it.

[0030] They are the top view of expansion paper 13' where drawing 5 A

accomplishes the little twist rod 13, and the sectional view which drawing 5 B cut this expansion paper 13' in the direction of a short hand (A-A line), and ****(ed) the orientation and the bacteria layer 5 of fiber 2. Drawing 6 is the expanded sectional view showing the arrangement condition and the bacteria layer 5 of an end face of fiber 2 when carrying out front view (drawing 5 view C) of the cutting plane of this little twist rod 13, i.e., the cutting plane of expansion paper 13' which accomplishes this rod 13.

[0031] It gets remarkably impudent in the capillary action from end cutting plane 13a to other end cutting plane 13b of the little twist rod 13 to the orientation of the fiber 2 in the little twist rod 13, i.e., capillary action, (urine osmosis operation) according to this paper structure S, and improvement in an excrement treatment effect is aimed at.

[0032] If it puts in another way, it will twist toward other end cutting plane 13b from end cutting plane 13a of the above-mentioned little twist rod 13, and will point to fiber 2 along with the doubling line 4, the end face of this fiber 2 will be exposed to the above-mentioned cutting planes 13a and 13b, and urine osmosis in the longitudinal direction in this rod 13 will be aimed at by the capillary action of fiber 2 from each cutting planes 13a and 13b.

[0033] Moreover, after the above-mentioned little twist rod 13 twists the twist string 3 and forms him, it cuts and forms what gave twist return, and has the rough opening 8 which this twist string 3 has twist and according to return structure and twist return. This holds the twist peculiarity of the little twist rod 13, and a twist gestalt is held good.

[0034] The above-mentioned little twist rod 13 is made to hold the bacteria which promote disaggregation of fiber 2 as other examples.

[0035] For example, the bacteria possession layer 5 is formed in a wrapper band 1 as mentioned above, or with bacteria, the possession layer of an antimicrobial agent or/and a deodorant is formed in the front face of a wrapper band 1, and is twisted, a string 3 is formed, and the little twist rod 13 which cuts this twist string 3 to short **, and holds bacteria is formed. Bacteria are activated by collaborating with said twist structure (twist HIDA structure and rough opening structure), and touching the urine at the time of urination of an animal, and the stream of a toilet, and promote disaggregation of fiber 2, and decomposition.

[0036] Moreover, dialytic ferments, such as an organic nature nutrient for bacteria and an amylase, are made to contain in addition to these bacteria, said bacteria possession layer 5 is formed, and disaggregation of fiber 2 and decomposition are promoted according to these synergistic effects.

[0037] Moreover, while carrying out [offensive odor / which comes out of urine by the possession layers 6 and 9 of an antimicrobial agent and a deodorant] adsorption treatment, an antibacterial treatment is carried out and the health in the handling after urine osmosis is secured. Moreover, an aromatic is added and the uraroma is eliminated with strong aroma.

[0038] The excrement processing material 12 which consists of the above-mentioned little twist rod 13 is enriched in cushioning properties and heat retaining property with said twist HIDA 7 and rough opening 8, and this invention contains the matting for beds which has an excrement processing facility using this description.

[0039]

[Effect of the Invention] In case the excrement processing material of the animal which cuts the conventional twist string to short **, and consists of a little twist rod is formed according to this invention, the excrement processing material of the animal which was made enriched in the urine osmosis operation (a water absorption operation and water retention operation) which this little twist rod has, and made the function as excrement processing material improve remarkably can be offered.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] For (A), the top view expanding and showing the important section of the wrapper band which forms the twist string for little twist rod formation, (B), and (C) are the perspective view showing the superposition condition of the wrapper band which forms the above-mentioned twist string.

[Drawing 2] For (A), the perspective view in which twisting with the little twist rod which accomplishes excrement processing material, and expanding and showing a string's important section, and (B) are drawing explaining the cutting angle from which it twists in formation of a little twist rod, and a string is cut to short **.

[Drawing 3] The front view which **** the important section in the condition of compressing the above-mentioned twist string into an oblong.

[Drawing 4] The sectional view explaining the condition of having covered the tray for elimination with the little twist rod which accomplishes the excrement processing material of the above-mentioned oblong.

[Drawing 5] (A) is the top view of the expansion paper of a little twist rod, and (B) is

this A-A line expanded sectional view.

[Drawing 6] The important section expanded sectional view of the view C in drawing 5 A and B which shows the cutting plane of the expansion paper of a little twist rod.

[Description of Notations]

1 Wrapper Band

1' Precise layer

2 Fiber

3 Twist String

4 Twist and it is Doubling Line.

5 Bacteria Possession Layer

6 Antimicrobial Agent Possession Layer

7 Twist HIDA

8 Rough Opening

9 Deodorant Possession Layer

10 Pressure Roll

11 Tray for Elimination

12 Excrement Processing Material

13 Little Twist Rod

13' Expansion paper of a little twist rod

13a End cutting plane

13b Other end cutting plane

S Paper structure

Y, Y' Cutting plane line

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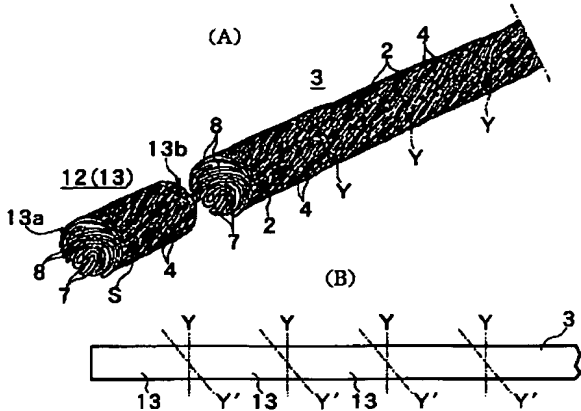
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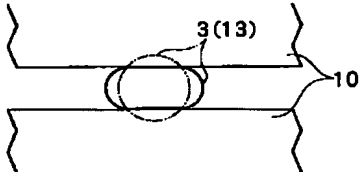
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DRAWINGS

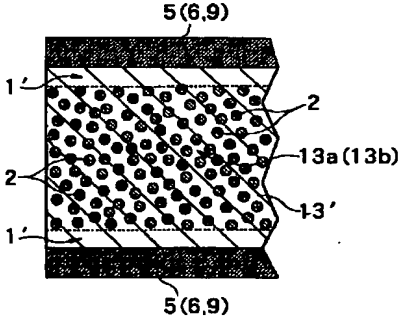
[Drawing 2]



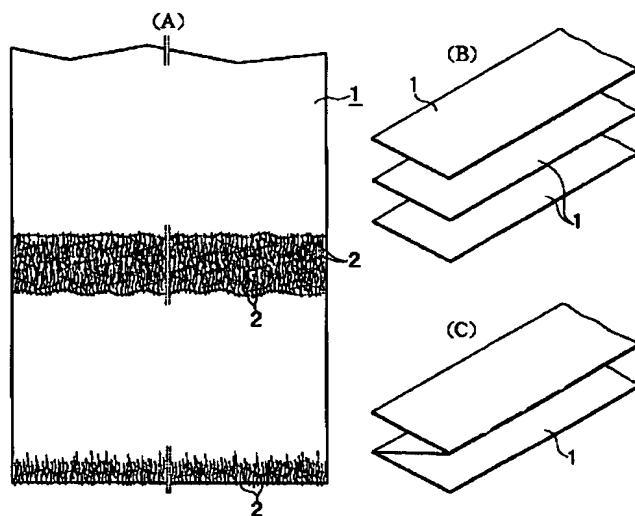
[Drawing 3]



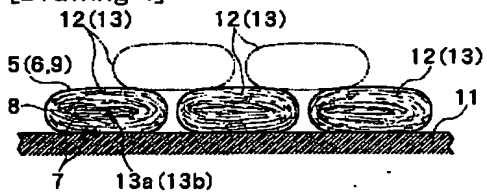
[Drawing 6]



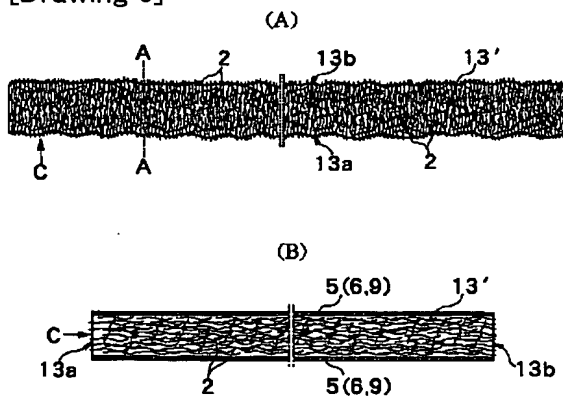
[Drawing 1]



[Drawing 4]



[Drawing 5]



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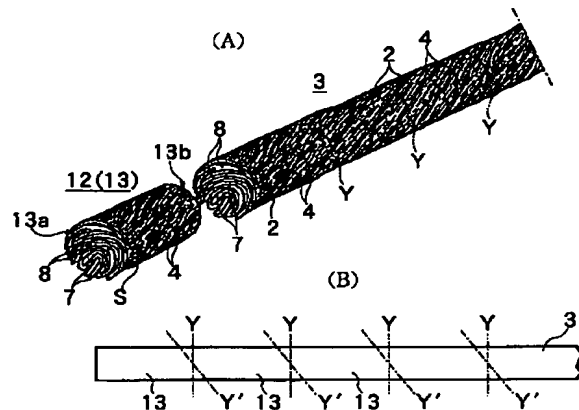
Fターム(参考) 2B101 AA11 GB05

(54)【発明の名称】 動物の排泄物処理材

(57)【要約】

【課題】尿浸透性に優れた動物の排泄物処理材を提供する。

【解決手段】帯紙1に撚りを与えて形成せる撚り紐3を短寸に切断した短小撚りロッド13から成る動物の排泄物処理材12において、この短小撚りロッド13を一端切断面13aから他端切断面13bへ向け繊維2を指向した紙層構造Sにし、該紙層構造Sにより各切断面13a、13bから短小撚りロッド13内へ尿等の排泄物を浸透させるようにする。



【特許請求の範囲】

【請求項1】帯紙に捻りを与えて形成せる撚り紐を短寸に切断した短小撚りロッドから成る動物の排泄物処理材において、上記短小撚りロッドは一端切断面から他端切断面へ向け繊維を指向した紙層構造を有し、該紙層構造により各切断面から短小撚りロッド内へ排泄物を浸透させる構成としたことを特徴とする動物の排泄物処理材。

【請求項2】帯紙に撚りを与えて形成せる撚り紐を短寸に切断した短小撚りロッドから成る動物の排泄物処理材において、上記短小撚りロッドは一端切断面から他端切断面へ向かう撚りヒダを有し、該撚りヒダ間に撚り戻しにより形成せる粗空隙を有することを特徴とする動物の排泄物処理材。

【請求項3】上記短小撚りロッドの撚り角を1cm当り180度未満に設定したことを特徴とする請求項1又は2記載の動物の排泄物処理材。

【請求項4】上記短小撚りロッドの断面形状を略長楕円形にしたことを特徴とする請求項1又は2又は3記載の動物の排泄物処理材。

【請求項5】上記短小撚りロッドに繊維の離解を促進するバクテリアを保有させたことを特徴とする請求項1又は2又は3又は4記載の動物の排泄物処理材。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は猫や室内犬等の愛玩動物、或いはモルモットやハムスター等の実験用動物等の排泄物処理材に関する。

【0002】

【従来の技術】特公昭54-24945号公報は、抄造紙を適当な狭巾の帯紙に断裁し、該帯紙に撚りを与えて撚り紐を形成し、この撚り紐を長さ2～10mm程度の短寸に切断した短小撚りロッドから成る動物の排泄物処理材を示している。

【0003】この排泄物処理材は動物の排泄用トレー等に多数敷き詰めて使用され、該処理材のヒダによる保水作用と紙の吸水作用とにより尿浸透を図り、この尿が浸透された処理材をトレーから取り除いて水洗トイレ等に流し、再び新しい処理材をトレーに補充するようにしている。

【0004】

【発明が解決しようとする課題】この発明は上記従来の排泄物処理材の如く抄造紙を撚り合せて形成した撚り紐を短寸に切断する構成を採用しながら、上記従来例における尿浸透作用（吸水作用と保水作用）を富有せしめ排泄物処理材としての機能を著しく向上せしめた動物の排泄物処理材を提供するものである。

【0005】

【課題を解決するための手段】その手段として、上記撚り紐を短寸に切断して短小撚りロッドから成る動物の排泄物処理材を形成する際に、この短小撚りロッドを一端

切断面から他端切断面へ向け繊維を指向した紙層構造にし、該紙層構造により短小撚りロッドにおける繊維の指向方向への毛管作用、即ち短小撚りロッドの一端切断面から他端切断面への毛管作用（尿浸透作用）を著しく増長し排泄物処理効果の向上を図る。

【0006】上記短小撚りロッドは1cm当り180度未満の撚り角を以て撚り合せて撚りヒダ間の粗空隙度を高め、粗空隙内における保水作用とそれに続く浸透作用を高める。

10 【0007】又上記短小撚りロッドは撚り合わせた後、撚り戻しを与えて撚り形態と上記粗空隙とを確保する。これにより、上記紙層構造と相乗して著しい尿浸透効果の改善が得られ、又上記粗空隙によりクッション効果と保温効果をも向上できる。

【0008】又上記短小撚りロッドの端面形状を略長楕円形にして、敷設面に対する坐りを良くし（転動を防止し）排泄トレー内に安定に敷き詰め、加えて受液面を拡大する。

20 【0009】又上記短小撚りロッドには繊維の離解を促進するバクテリアを保有させる。前記の通り、使用済の排泄物処理材は水洗トイレに流して廃棄する場合、上記バクテリアは前記紙層構造及びヒダ構造と協働して水洗トイレ内や配水管内若しくは浄化槽内における繊維の離解と分解を促進し、処理施設における処理負担を軽減する。

【0010】

【発明の実施の形態】以下この発明の実施形態例を図1乃至図6に基き説明する。

30 【0011】1はバルブから抄造された帯紙を示し、該帯紙1は既知の方法により抄紙時に湿紙の走行方向へバルブ繊維2の指向性を持たせて抄造する。

【0012】図1Aに示すように、帯紙1は例えばミルクカートの離解バルブ繊維2を長手方向（抄紙帯の走行方向）に指向せる方法で広巾の帯紙を抄造し、該広巾帯紙を繊維2の指向方向に沿って狭巾に列切りした紙テープであり、該繊維2の指向性により長手方向への引張り強さ、つまり短手方向に沿う引き裂け強度を有すると共に、同繊維2の指向方向への毛管作用（指向方向への水分浸透作用）を富有させた紙層構造を有する。

40 【0013】つまり帯紙1は繊維2の縦方向指向（帯紙1の長手方向指向）により易縦引き裂け性を有する反面、横引き裂け強度を有し、撚り紐3形成時における帯紙1の横引き裂けを防止する。

【0014】上記帯紙1としては坪量30～40g/m²の範囲で選択し、短手方向の長さを3～15cmの範囲の紙巾にし、この帯紙1に例えば長さ1cmあたり30度～180度の撚りを与えて撚り紐3にする。この撚り紐3はバルブ繊維2が一端から他端に向け長手方向へ指向された紙層構造を有する。即ち図2Aに示すように、該撚り紐3の撚り合せ線4に沿い上記繊維2が指向

された紙層構造を持つ。

【0015】上記撚り紐3は一条の帯紙1にて形成するか、又は図1Bに示すように、複数条、例えば3条の帯紙1を重ね合わせるか、或いは図1Cに示すように、巾広の帯紙1を長手方向の折線を介し短手方向に重ね折りし、これに上記撚りを施して撚り紐3にする。即ちこの撚り紐3から得られる後記する短小撚りロッド13はこの帯紙1の重ね合わせ又は重ね折りによる撚り構造を与え、粗空隙8の数の増長と機能向上を図る。

【0016】上記帯紙1の表面にはバクテリア保有層5をスプレーガン又はローラー等により塗布して形成する。

【0017】抄紙機で抄造し乾燥された帯紙1は抄紙帯やプレスロールやドライヤーロールと接する表面に炭酸カルシウム等の無機充填剤や澱粉等による比較的滑沢で緻密な層1'を形成しており、図5、図6に示すように、この緻密な層1'の表面即ち帯紙1の表面に繊維2の離解を促進する上記バクテリア保有層5を形成する。

【0018】又は同帯紙1の表面に抗菌剤保有層6を形成する。又は同帯紙1の表面に消臭剤保有層9を形成する。或いはバクテリアと共に抗菌剤又は／及び消臭剤の保有層を帯紙1の表面に形成する。

【0019】上記バクテリア保有層5等を形成した帯紙1又は、バクテリア保有層5等を形成しない帯紙1を準備し、何れかをを用い撚り紐3を形成する。

【0020】上記撚り紐3は既知の方法で帯紙1に撚りを与えて形成し、断面視略円形の撚り紐3にする。この撚り紐3は図2Aに示すように、複数の撚りヒダ7と該各撚りヒダ7間に形成された複数の粗空隙8を有する。

【0021】図2A、Bに示すように、上記撚り紐3を短寸に切断し断面視略円形の短小撚りロッド13を多数形成する。

【0022】又は図3に示すように、加圧ロール10により上記撚り紐3の断面形状を略長楕円形に圧縮付形し、この撚り紐3を短寸に切断して長楕円形の短小撚りロッド13を多数形成する。

【0023】図4に示すように、長楕円形の短小撚りロッド13は敷設面に対して坐り性が良好であり、転動を抑止して安定に敷設できる。加えて上方からの排泄物に対する受液面積を増大する。

【0024】上記短小撚りロッド13は複数の撚りヒダ7と該各撚りヒダ7間に形成された複数の粗空隙8を有する。この粗空隙8は短小撚りロッド13の両端切断面13a、13bにおいて開放されている。この粗空隙8は導管機能を有して短小撚りロッド13内への尿浸入を導き、前記紙層構造Sとの協働によりロッド13内への尿浸透を効果的に行う。

【0025】一適例として図2Bに示すように、上記撚り紐3を同撚り紐3の軸線と直交する切断線Yにおいて10～50mm程度の短寸に切断して排泄物処理剤12

を成す短小撚りロッド13を形成する。

【0026】他の適例として図2Bに示すように、上記撚り紐3を同撚り紐3の軸線と斜めに交叉する切断線Y'上において10～50mm程度の長さで斜めに切断して排泄物処理剤12を成す短小撚りロッド13を形成する。この斜め切りにより各短小撚りロッド13の切断面の面積を増大し、後記する排泄物浸透作用を更に向上する。

【0027】上記短小撚りロッドは1cm当たり180度未満の撚り角を以て撚り合せて同撚り角を持つ複数の撚りヒダ7と粗空隙8を形成し、上記撚り角によって撚りヒダ7間の粗空隙8の空隙度を高め、粗空隙内における保水作用とそれに続く浸透作用を高める。

【0028】詳述すると、前記のように既知の方法により抄紙時に湿紙の走行方向へ離解パルプ繊維の指向性を持たせて抄造した帯紙1に、長さ1cmあたり30度～180度の捻りを加えて撚り紐3を形成し、次いでこの撚り紐3を長さ10～50mm程度に切断し、該切断した長さに応じ略30度～略90度程度の撚り角を持った短小撚りロッド13を形成する。よって1cm当たり180度未満の撚り角を持った撚りヒダ7並びに粗空隙8を形成する。

【0029】図5、図6に示すように、上記短小撚りロッド13は一端切断面13aから他端切断面13bに向け繊維2を指向した紙層構造Sを有し、上記短小撚りロッド13の切断面13a、13bは前記緻密な層1'で覆われておらず、繊維2の端面が露出している。

【0030】図5Aは短小撚りロッド13を成す展開紙13'の平面図、図5Bはこの展開紙13'を短手方向(A-A線)で切断して繊維2の指向方向とバクテリア層5を概示した断面図であり、図6は同短小撚りロッド13の切断面、即ち同ロッド13を成す展開紙13'の切断面を正面視(図5矢視C)した時の、繊維2の端面の配置状態とバクテリア層5を示す拡大断面図である。

【0031】この紙層構造Sにより短小撚りロッド13における繊維2の指向方向への毛管作用、即ち短小撚りロッド13の一端切断面13aから他端切断面13bへの毛管作用(尿浸透作用)を著しく増長し排泄物処理効果の向上を図る。

【0032】換言すれば、上記短小撚りロッド13の一端切断面13aから他端切断面13bに向かう撚り合せ線4に沿い繊維2を指向し、該繊維2の端面を上記切断面13a、13bに露出し、各切断面13a、13bから繊維2の毛管作用により同ロッド13内長手方向への尿浸透を図る。

【0033】又上記短小撚りロッド13は撚り紐3を撚り合せ形成した後、撚り戻しを与えたものを切断して形成し、該撚り紐3が持つ撚り戻し構造と撚り戻しによる粗空隙8とを有する。これにより短小撚りロッド13の撚り癖を保持し撚り形態を良好に保持する。

【0034】他例として上記短小撚りロッド13に繊維2の離解を促進するバクテリアを保有せしめる。

【0035】例えば前記のように帯紙1にバクテリア保有層5を形成するか、又はバクテリアと共に抗菌剤又は／及び消臭剤の保有層を帯紙1の表面に形成して撚り紐3を形成し、この撚り紐3を短寸に切断してバクテリアを保有する短小撚りロッド13を形成する。バクテリアは前記撚り構造（撚りヒダ構造と粗空隙構造）と協働して動物の排尿時の尿やトイレの流水と接することにより活性化して繊維2の離解と分解を促進する。

【0036】又このバクテリアに加えバクテリア有用機性栄養剤やアミラーゼ等の分解酵素を含有させて前記バクテリア保有層5を形成し、これらの相乗効果により繊維2の離解と分解を助長する。

【0037】又抗菌剤と消臭剤の保有層6、9により尿から出る悪臭を吸着除去すると共に、抗菌処理して尿浸透後の取扱いにおける衛生を確保する。又芳香剤を加え、強い芳香で尿臭を消去する。

【0038】上記短小撚りロッド13から成る排泄物処理材12は、前記撚りヒダ7と粗空隙8によりクッション性と保温性を富有し、本発明はこの特徴を利用した排泄物処理機能を有する寝床用敷物を含む。

【0039】

【発明の効果】この発明によれば、従来の撚り紐を短寸に切断して短小撚りロッドから成る動物の排泄物処理材を形成する際に、この短小撚りロッドが持つ尿浸透作用（吸水作用と保水作用）を富ませしめ排泄物処理材としての機能を著しく向上せしめた動物の排泄物処理材を提供できる。

【図面の簡単な説明】

【図1】（A）は短小撚りロッド形成用の撚り紐を形成する帯紙の要部を拡大して示す平面図、（B）、（C）は上記撚り紐を形成する帯紙の重畳状態を示す斜視図。＊

＊【図2】（A）は排泄物処理材を成す短小撚りロッドと撚り紐の要部を拡大して示す斜視図、（B）は短小撚りロッドの形成において撚り紐を短寸に切断する切断角を説明する図。

【図3】上記撚り紐を長楕円形に圧縮する状態の要部を概示する正面図。

【図4】上記長楕円形の排泄物処理材を成す短小撚りロッドを排泄用トレーに敷いた状態を説明する断面図。

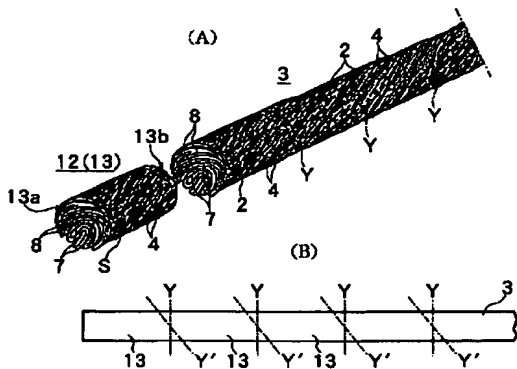
【図5】（A）は短小撚りロッドの展開紙の平面図、（B）は同A-A線拡大断面図。

【図6】短小撚りロッドの展開紙の切断面を示す図5A、Bにおける矢視Cの要部拡大断面図。

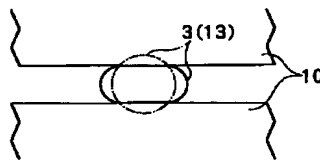
【符号の説明】

- | | |
|-------|-------------|
| 1 | 帯紙 |
| 1' | 緻密な層 |
| 2 | 繊維 |
| 3 | 撚り紐 |
| 4 | 撚り合せ線 |
| 5 | バクテリア保有層 |
| 6 | 抗菌剤保有層 |
| 7 | 撚りヒダ |
| 8 | 粗空隙 |
| 9 | 消臭剤保有層 |
| 10 | 加圧ロール |
| 11 | 排泄用トレー |
| 12 | 排泄物処理材 |
| 13 | 短小撚りロッド |
| 13' | 短小撚りロッドの展開紙 |
| 13a | 一端切断面 |
| 13b | 他端切断面 |
| S | 紙層構造 |
| Y, Y' | 切断線 |

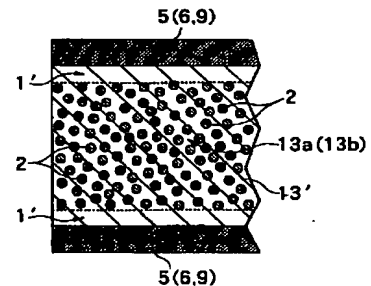
【図2】



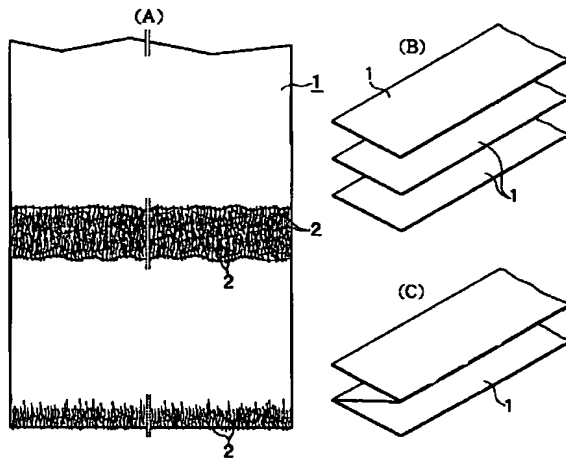
【図3】



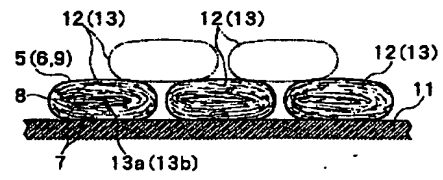
【図6】



【図1】



【図4】



【図5】

